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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of: ) Group Art Unit: 1625  
Jun Hu ) Confirmation No: 9646  
Serial No: 10/562,090 ) Examiner: N.S. Chandrakumar  
Filed: March 6, 2007 )  
For: METHYL 2,4,9-TRITHIAADAMANTANE )  
7 - CARBOXYLATE )  
I hereby certify that this correspondence was  
transmitted to the United States Patent and  
Trademark Office via facsimile on September  
14, 2007 to phone number 571-273-8300.  
\_\_\_\_\_  
Joseph J. Crimaldi

CERTIFICATE OF FACSIMILE  
TRANSMISSION

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Jun Hu, declare and say as follows:

- (1) I have received the following degree(s): a Bachelor of Science Degree in Chemistry from Fudan University of Shanghai, China in 1987; a Master of Science Degree in Organic Chemistry from the University of West Virginia, in 1994; and a Ph.D. in Organic Chemistry from Purdue University in 1997. In addition, I have performed Postdoctoral work in Organic Chemistry at the University of Texas, Austin and North Carolina State University from 1997 until 1999.
- (2) I have been working and/or teaching in the field of organic chemistry for at least 20 years and currently hold the position of Associate Professor of Chemistry at The University of Akron (Main Campus in Akron, Ohio).

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(3) I am the sole inventor for United States Patent Application No. 10/562,090 (hereinafter USSN 10/562,090).

(4) I have been asked to comment on the nature of the disclosure contained in Kittredge et al. which is currently of record in USSN 10/562,090, and on what a person of ordinary skill in the art would understand upon reading the disclosure contained in Kittredge et al.

(5) I have read Kittredge et al. and will comment on Kittredge et al. as it relates to the methyl ester of the present invention. I have also been asked to comment specifically on the nature of the disclosure contained in Kittredge et al. as it pertains to Formula 7, namely ethyl 2,4,9-trithiaadamantane-7-carboxylate, contained within Kittredge et al.

(6) First of all, the formula for the ethyl 2,4,9-trithiaadamantane-7-carboxylate as disclosed in Kittredge et al. (see Formula 7) and the methyl 2,4,9-trithiaadamantane-7-carboxylate of the present invention, while similar in structure are significantly different in physical and/or chemical properties. This is because, in part, the methyl 2,4,9-trithiaadamantane-7-carboxylate of the present invention is at least 8 times more reactive than the ethyl 2,4,9-trithiaadamantane-7-carboxylate disclosed in Kittredge et al.

Additionally, prior to the present invention, no one had synthesized the presently claimed methyl ester. Accordingly, in view of the above, one of ordinary skill in the art would not have known, nor would have expected the methyl ester of the present invention to be at least 8 times more reactive than the ethyl ester of Kittredge et al. One of the reasons for this increase seen in reactivity involves the steric hindrance of the methyl ester, located next to the tertiary center, being less severe than that of the ethyl ester.

Furthermore, a methyl ester precursor for the presently claimed compound possesses more flexible side functional groups thereby permitting the overall tri-cyclization reaction for the formation of the cage structure to proceed at a much faster rate. This, in turn, results in a substantial increase in the reaction yield by nearly a factor of two. As would be apparent to one of ordinary skill in the art, such an increase in the reaction yield confers a number of benefits including, but not limited to, reducing costs associated with producing the claimed compound, reducing the amount of by-products and/or unreacted

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starting agents remaining in the cured compound.

(7) In view of the disclosure contained in Kittredge et al., one of ordinary skill in the art would not have arrived at the compound of the present invention, as recited in pending claim 1. Accordingly, Kittredge et al. fails to disclose, teach or suggest the claimed methyl 2,4,9-trithiaadamantane-7-carboxylate compound.

(8) I, Jun Hu declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated:

09/13/2007

Jun Hu

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